University of Maryland, College Park
Master of Science Program in Applied Economics
Washington, DC location: 1400 16th St, NW, suite 140

Empirical Analysis III: Econometric Modeling and Forecasting

ECON 645
Spring 2021
Instructor: Cristina Tello-Trillo
Email: Tellotri@umd.edu
Class Meets: Mondays 7-9:15pm.
- There will be two 50/75-minutes meeting. First session from 7:00pm-7:50pm, followed by a 10 min break, then a second session from 8:00pm-9:00/9:15pm.
Instructor Office Hours: Fridays by appointment.

TA: Scott Abramson
Email: JSAbram@umd.edu

Pre requisites: ECON 644

Course description: This is a course in applied econometrics, emphasizing the implementation of modern econometric techniques to analyze concrete economic problems, using real data and recent econometric software. Though not a theoretical course, we will introduce some basic theory and concepts to motivate an appropriate use of the methods.

Our program has 7 general learning objectives:

1. Ability to understand, evaluate and analyze economic data
2. Ability to understand and interpret statistical evidence from economic data
3. Ability to apply empirical evidence to assessing economic arguments
4. Ability to apply macroeconomic theories to policy discussions
5. Ability to apply microeconomic theories to policy discussions
6. Ability to communicate economic ideas to a broader audience
7. Ability to evaluate the effectiveness of policy programs using sound economic techniques

The learning outcomes that pertain to this course are: 1, 2, 3, 6, and 7

At the end of the course, you should be able to build, estimate and interpret your own econometric models for concrete economic problems, write professional reports/papers using econometric methods, use STATA software for econometric and statistical analysis, and understand empirical papers in the field of economics and gain sense of what makes an empirical paper convincing.

Textbooks and Software:

Required:
- Introductory Econometrics: A Modern Approach, 7th edition, Jeffrey M. Wooldridge. (5th /6th edition are also acceptable)
- Data Management Using STATA: A practical Handbook, Michael N. Mitchell (2010)
- Copies of the syllabus, lecture notes, problem sets and other relevant documents will be made available through the course website.
- We will use STATA for the empirical analysis. You can order a student version which is discounted. Information on how to order STATA is available on the last page of this syllabus.

Recommended:
- Microeconometrics using STATA, Cameron and Trivedi (2009)
- Mostly Harmless Econometrics: An Empiricist's Companion, Angrist and Pischke (2009)

Grading:

- Midterm Exam: 30%
- Final Exam: 35%
- Problem sets 1-4: 20%
- Paper presentation: 10%
- Online Discussion Sessions: 5%

The problem sets will include theoretical problems and empirical assignments. You will have a week to solve each problem set. I encourage you to discuss the problems with your classmates. From my experience as a student, you can learn a great deal from your fellow students. However, after discussing problems, you should solve the problems on your own. Joint assignments will not be graded.

All problem sets are to be submitted electronically as STATA log files on ELMS and are due before class on Mondays at 6.45pm.[1] Since answers are posted on ELMS the same day, LATE submissions are not acceptable.

Paper Presentations:

Students in teams of 3 (or 2 depending on enrollment) will chose one research paper that is related to one the topics covered in the course. Please put your name next to the paper that you are interested in presenting in this google sheet. Your job is to create a 15-minute presentation describing the paper, focusing the bulk of the time explaining what econometric techniques were used in their "main" regression, and if possible critiquing the technique used based on what we've covered in the course to that point. You will be required to submit a first draft of the presentation to me no later than 8PM the Thursday evening preceding your presentation date. I will write back with feedback which should be incorporated into the final presentation, generally by Saturday evening. Presentations will be

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[1] If some exercises need to be done by hand, students need to scan (or take high quality photos) the solutions and submit them electronically.

scattered throughout the course. If you know you have to miss a class on a given Monday evening, please do not sign up for that evening's presentation.

Online Discussions:
I will post a question/series of questions relevant to the course material & presentations every *Thursday at 11am.* The discussion will be open until *Saturday at 11am* for you to comment/respond. I will check in twice a day to participate/respond/redirect.

Final Course Grades
Students' grades on each component of the course will be weighed according to the scale above to calculate their numerical course grade. The numerical course grades will be translated into letter grades as follows:
93-100 A 90-92 A-
89-80 B+ 70-79 B 60-69 B-
50-59 C+ 40-49 C 30-39 C-
20-29 D+ 10-19 D 0-9 F
The grade A+ is reserved for the top student or two in the course (or maybe no one) – at the instructor's discretion.

Tentative Course Outline:

- March 1: Introduction, Endogeneity, Omitted Variable Bias, Instrumental Variables (Wooldridge Chapter 3.3, 9.4, 9.5, 15.1)
- March 8: Instrumental variables and 2SLS (Wooldridge Chapter 15.1-15.5; continued use of do-files and log-files, Acock, Ch. 4, reading and writing data files, Mitchell Ch. 2, data cleaning, Mitchell Ch. 3)
- March 22*:* Panel Data I (Wooldridge Chapter 13, 14.1 & creating variables, first half of Mitchell, Ch. 5) **Pset #1 Due**
    - *Student's presentation I: Instrumental Variables*
- March 29: Panel Data II (Wooldridge Chapter 14.1-14.3 & 8 and Mitchell Chapter 6)
- April 5: Natural Experiments and Difference-in-Differences **(Pset #2 Due)**
    - *Student's presentation II: Instrumental Variables*
- April 12: Review + IV and Panel STATA exercises
- April 19: Midterm
- April 26: Probit and Multivariate/Dummy regression analysis (Wooldridge Chapter 7.1, 7.5, 17.1)
- May 3: Logit **(Pset #3 Due)**
    - *Student's presentation III: Panel Data*
- May 10: Intro to Time Series I (Wooldridge Chapter 10-12) **(Pset #4 – Part I Due)**
    - May 17: Intro to Time Series II (Wooldridge Chapter 10-12) **(Pset #4 – Part II Due)**
    - *Student's presentation IV: Diff-in-Diff / Probit/Logit*
- May 24: Final Exam

Academic Integrity:

The University of Maryland has a nationally recognized Code of Academic Integrity. You should inform yourself about the UMD policies related to academic misconduct: https://www.studentconduct.umd.edu/home/current-students (Links to an external site.)

Cases of academic misconduct, including plagiarism and giving or receiving unauthorized assistance on exams, will be referred to the UMD Office of Student Conduct. If found responsible for academic misconduct, students can be subject to sanctions. The standard sanction for graduate students found responsible for cheating on exams is expulsion from the university.

 The exams in this course will ask students to affirm the UMD Honor Pledge: "I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination."